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Foster failed to read and consequently does not cite along with the other theories advanced as to the origin of the polyradiate cestodes, the theory offered by us in the article previously cited, namely that the polyradiate cestodes do not represent distinct species or genera which necessarily originate from and in turn give rise to onchospheres with supernumerary hooks and cysticerci with an excessive number of suckers but may arise from double embryos produced by the partial *separation* of early blastomeres and not by the *fusion* of normal embryos.

In the light of a large amount of data both in the case of natural and experimentally produced twin embryos and adults of a large number of animals which shows that the individuals may be joined in various ways and degrees, our theory as to the origin of the polyradiate cestodes seems the most logical of those offered.

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AN ORGANIC OOLITE FROM THE ORDOVICIAN

MICROSCOPIC examination of a siliceous oolite from the so-called transition bed between the Prairie du Chien dolomite and St. Croix sandstone at McGregor, Iowa, shows the oolite grains to possess undoubted organic structures of the algal type. The matrix of the oolite grains is dolomitic, and many of the original grains themselves have been partly or wholly changed to dolomite with obliteration of structure, prior to silification.

The grains range from .1 mm. to 1.13 mm. in diameter, and, when well preserved, show good concentric and radial structure in addition to the minute sinuous fibers similar to those which characterize the *Girvanella* type of calcareous algæ. These fibers have an average diameter of about .015 mm. Typically the well-preserved grains consist of an inner structureless nucleus, followed by an intermediate band showing radial structure, and this again by an outer band bearing the sinuous fibers. In some instances, however, the two outer bands grade gradually into each other without any distinct line of demarcation.

In view of the present controversy regarding the origin of oolite, it is believed that this occurrence merits more than passing notice.

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USE OF C.G.S. UNITS

IN SCIENCE of December 24, page 904, Professor Kent has been good enough to review the various points raised in the discussion concerning the fundamental equation of dynamics. As space is limited and the discussion has been prolonged, the pedagogic difficulty in the definition of the dyne may be passed over for the present. Whether there is real difficulty in expressing certain derived units because of the use of exponents is open to argument. The cent is a serviceable unit notwithstanding that some financial transactions run up to the millions.

Of more importance however is Professor Kent's statement:

> Of course it is not difficult for *one* who is engaged constantly in the use of the C.G.S. system and who during that year has had no occasion to use the old units, to break away from them, but it is not only difficult but impossible, for a hundred million people who are constantly using the old units to break away from them.

Has he not here overlooked the fact that of the three fundamental units, centimeter, gram and second, one at least, the unit of time, *is* constantly used by more than a hundred million people; and of the three concepts, it is perhaps the most difficult. Are not most scientific men to-day in all countries using C.G.S. units and their derivatives? Is not the kilometer more widely used than the mile; and has not the kilogram come into very general use?

ALEXANDER MCADIE

THE FIRST SECRETARY OF AGRICULTURE

TO THE EDITOR OF SCIENCE: I wish to correct a misstatement which occurred in my article on "Botany in Relation to American Agriculture," published in SCIENCE, January 7. In this article I stated that J. M. Rusk was the

first secretary of agriculture in the President's cabinet. I based this statement upon the fact that the yearbook of the Department of Agriculture for 1888 contained the last report of N. J. Colman as commissioner of agriculture, and the yearbook of 1889, the first report of J. M. Rusk as secretary of agriculture. In his report Rusk states:

> I have the honor to respectfully submit my first annual report as secretary of agriculture, and the first report issued under the newly constituted Department of Agriculture. I assumed the duties of my office March 7, 1889, or twenty-six days after the approval of the law creating an executive department of what had heretofore been a bureau, in executive sense, of the government.

As no mention was made in either report of Colman having acted as secretary of agriculture during this short interval, I took it for granted that Rusk was the first secretary. I have received a letter from Dr. L. O. Howard, however, in which he states that Colman was really the first secretary of agriculture. He writes:

> Mr. Colman was commissioner of agriculture when the bill passed, and was appointed first secretary by President Cleveland on February 13, 1889, his services terminating with the outgoing of the administration on March 6, 1889.

G. P. Clinton

SCIENTIFIC BOOKS

Quantitative Laws in Biological Chemistry. By Svante Arrhenius. London, G. Bell and Sons, Ltd. 160 pp. 6 s. net.

The present volume is a restatement of the grounds upon which the illustrious author of the electrolytic dissociation theory arrived at the conviction that "biological chemistry can not develop into a real science without the aid of the exact methods offered by physical chemistry." It comprises a short résumé, developed with a remarkable degree of clarity and simplicity, of the author's work in the quantitative field of bio-chemistry, together with the investigations of others on neighboring ground. Originally, the material was compiled for the Tyndall lectures given in the Royal Institution in 1914, and is now offered to the public in the hope that it will evoke interest for the new discipline and stimulate new work.

A perusal of the volume, which deals mainly with the velocity of biochemical reactions, the influence of the several factors which govern such velocities and the position of equilibrium can not fail to impress the reader with certain facts. The fundamental import of a knowledge of physical, or rather theoretical, chemistry to the medical student of the future is readily grasped from these pages. The descriptive side of chemical science will more and more be found to be inadequate as a training for the complicated phenomena which the medical student will subsequently face. The volume shows that a real comprehension of the notions of experimental error, probable error and the like will open up to the student new and immense fields for research and for advance.

What is the chief task in that advance? It is to see how far the physico-chemical laws regarding the process of chemical reaction are applicable to biochemical processes and, what is much more important, to attempt to elucidate such processes as have been considered exceptions from known chemical laws. The yield which such an attempt will give is amply illustrated in the present work. It is hard to conceive an ungenerous attitude to a method which has elucidated so many organic processes. The well-known rule of Schutz is a case in point. It is shown that the deviation from the common monomolecular law is readily explainable on the basis of the influence of one of the reaction products on the course of the reaction. Further, the general law for such phenomena is as readily obtained and can be experimentally verified. The more complex phenomena of digestion, secretion and resorption in an animal's body may be shown, as the researches of Pawlow and his co-workers have established, to consist of a number of very simple regularities operating "in vivo" just as "in vitro" and extraordinarily independent of psychical effects and other factors which might lead to the belief that a quantitative study of such phenomena was impossible. As regards chemical equilibria mani-